

Alg. 2 Warm Up #6-5

#1: Answer exact & simplified. No decimals.
#2 & 3: Approximate to nearest hundredth.

1) $2^{3x} = \left(\frac{1}{8}\right)^{4x-6}$

2) $2^x = 5$

3) $\log_7\left(\frac{6}{x}\right) = \log_7 x + \log_7\left(\frac{x}{2}\right)$

Week 6 Classwork:

Warm Up

CP's: 6- # 104 ---> 106

CP's: 6- # 108 ---> 111

(with small sheet log puzzles)

CP's: Blue WS

CP's: 6- #123 ---> 125

HW Questions:

CL 6-148. Graph in three dimensions.

a. $(2, 3, 1)$

b. $(-2, 3, 0)$

c. $2x + y - z = 6$

CL 6-149. Determine the point of intersection of the three planes.

$$\begin{array}{l} \text{a. } \textcircled{1} x + y + z = 3 \\ \textcircled{2} 2x - y + 2z = 6 \\ \textcircled{3} 3x + 2y - z = 13 \end{array}$$

$$\begin{array}{l} \text{b. } \textcircled{1} x + y + 4z = 5 \\ \textcircled{2} -2x + 2z = 3 \\ \textcircled{3} 3x + y - 2z = 0 \end{array}$$

Elim y

$$\textcircled{1} + \textcircled{2} \rightarrow 3x + 3z = 9$$

$$\begin{array}{r} \textcircled{3} + 2\textcircled{2} \rightarrow 4x - 2y + 4z = 12 \\ \quad 3x + 2y - z = 13 \\ \hline -1(7x + 3z = 25) \end{array}$$

$$\textcircled{1} \quad 4 + y - 1 = 3$$

$$y = 0$$

$$\boxed{(4, 0, -1)}$$

$$\begin{array}{r} 3x + 3z = 9 \\ -7x - 3z = -25 \\ \hline -4x = -16 \\ \quad x = 4 \end{array}$$

$$\begin{array}{r} 3(4) + 3z = 9 \\ -12 \quad -12 \\ \hline 3z = -3 \\ \quad z = -1 \end{array}$$

CL 6-150. The parabola $y = ax^2 + bx + c$ passes through the points $(2, 3)$, $(-1, 6)$, and $(0, 3)$. Determine:

$c = 3$

a. The equation of the parabola. $\rightarrow y = ax^2 + bx + 3$

b. The vertex of the parabola.

c. The x-intercepts of the parabola.

from $(2, 3)$

$$3 = a(2)^2 + b(2) + 3$$

$$0 = 4a + 2b$$

then get a 2nd equation from $(-1, 6)$ to find a & b .

$$y = x^2 - 2x + 3$$

$$y = x^2 - 2x + \underline{1} + 3 - \underline{1}$$

$$y = (x - 1)^2 + 2$$

$$\boxed{\text{Vertex } (1, 2)}$$

$$\text{c) } 0 = (x - 1)^2 + 2$$

$$\quad -2 \quad -2$$

$$\sqrt{-2} = \sqrt{(x - 1)^2}$$

No x-int.

CL 6-151. Solve each equation to the nearest thousandth (0.001).

a. $2^x = 17$

b. $5x^3 = 75$

c. $\frac{5(3^{x+1})}{5} = \frac{85}{5}$

(d) $\log_3(x+1) = -2$

$$3^{x+1} = 17$$

$$\log 3^{(x+1)} = \log 17$$

$$\frac{(x+1) \log 3}{\log 3} = \frac{\log 17}{\log 3}$$

$$x+1 = \frac{\log 17}{\log 3}$$

$$-1 \quad -1$$

$$x = \frac{\log 17}{\log 3} - 1, \text{ then calculate!}$$

$$3^{-2} = x+1$$

$$\frac{1}{9} = x+1$$

$$\frac{1}{9} - \frac{9}{9} = x$$

$$\boxed{-\frac{8}{9} = x}$$

CL 6-152. A gallon of propane costs \$3.59. Inflation has steadily increased 4% per year. 1.04 multipliera. What did a gallon of propane cost ten years ago? $\rightarrow x = -10$

b. If this trend continues, how much longer will it be until it costs \$10?

CL 6-153. Find the inverse of this equation: $y = 2 + \sqrt{2x-4}$.

$$x = 2 + \sqrt{2y-4}$$

$$(x-2)^2 = (\sqrt{2y-4})^2$$

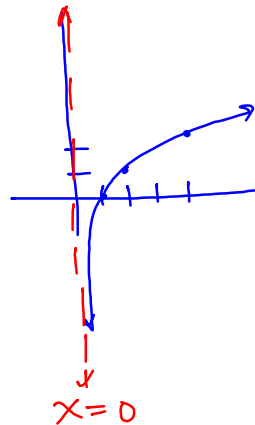
$$(x-2)^2 = 2y-4$$

CL 6-154. Use your Parent Graph Toolkit or make a table to graph $y = \log_2(x)$.

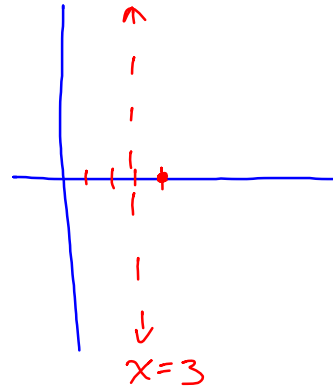
CL 6-155. Use your answer to the previous problem to graph $y = 1 + \log_2(x - 3)$. State the equation of the new asymptote and the new x-intercept.

154) $y = \log_2 x$

| x | y |
|---|---|
| 1 | 0 |
| 2 | 1 |
| 4 | 2 |



155) R+ 3, up 1



Test 6 will include:

Graph a point and equation in 3-D

Solve a system in 3 variables (by hand)

Find the equation of a parabola in standard form given three points

Change forms: $\log \leftrightarrow \exp$.

Graph log using transformations of the parent graph

Write an equation, $y = ab^x$, given 2 points

Find an inverse

Solve an exponential equation

Simplify rational expressions

Purple
classwork

HW:

Tan Test 6

Review Worksheet

Test is Tuesday.

Purple classwork:

$$8. \quad \frac{5x+9}{x^2-2x-3} + \frac{6}{x^2-7x+12}$$

$$\frac{(x-4)}{(x-4)} \cdot \frac{(5x+9)}{(x-3)(x+1)} + \frac{6}{(x-3)(x-4)} \cdot \frac{(x+1)}{(x+1)}$$

$$\frac{5x^2 - 20x + 9x - 36 + 6x + 6}{(x-4)(x-3)(x+1)}$$

$$\frac{5x^2 - 5x - 6}{(x-4)(x-3)(x+1)}$$

$$\frac{5(x^2 - x - 6)}{(x-4)(x-3)(x+1)}$$

Now factor
the top and
look for
giant ones!

Practice 1/2 sheet.

$$\textcircled{1} \quad x - 9y + 4z = 1 \longrightarrow x - 9y + 4z = 1$$

$$\textcircled{2} \quad (-4x + 18y - 8z = -6) / 2 \longrightarrow -2x + 9y - 4z = -3$$

$$\textcircled{3} \quad 2x + y - 4z = -3$$

$$-x = -2$$

$$x = 2$$

$$\textcircled{1} + \textcircled{3} \longrightarrow \begin{cases} 3x - 8y = -2 \end{cases}$$

$$\textcircled{2} + \textcircled{1} \longrightarrow \begin{cases} x = 2 \end{cases}$$

2

$$3(2) - 8y = -2$$

-6

$$-8y = -8$$

$$y = 1$$

$$\textcircled{1} \rightarrow 2 - 9(1) + 4z = 1$$

+7

$$4z = 8$$

$$z = 2$$

$$(2, 1, 2)$$